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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/687,881	10/13/2000	Mohamed Khalil	22171.162.02/10661RR/US02	8691

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EXAMINER

PHAN, MAN U

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/687,881

Applicant(s)

KHALIL ET AL.

Examiner

Man Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>#3</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The application of Khalil et al. for a "Buffer management for mobile internet protocol" filed 10/13/2000 has been examined. This application claims benefit from Provisional Application 60/160,031 dated 10/18/1999. Claims 1-28 are pending in the application.

Claim Rejections - 35 USC ' 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-13 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rai et al. (US#6,414,950) in view of Sato (US#6,553,015).

With respect to claims 1-7, both Rai et al. (US#6,414,950) and Sato (US#6,553,015) discloses a novel method and system for supporting a handoff of a mobile node from a first agent of a first network to a second agent of a second network according to the essential features of the claims. Rai teaches the Mobile IP handoffs which involve exchange of control messages between an end system's agent, the end system's home agent and potentially its corresponding hosts (CHs) (with route optimization option) (Col. 2, lines 31 plus). Rai further teaches in Fig. 34, illustrated the ladder diagram depicting a micro handoff scenario, in which the micro mobility handoff handles end system (designated MN for mobile node) movement between wireless hubs that belong to the same registration server and where the end system can still be served by the existing serving IWF. When an advertisement is received from a new wireless hub (through a new AP), the end system sends a message to request registration to the registration server. The registration request is relayed from the new AP to the new wireless hub to the registration server. When the registration server determines that the existing IWF can still be used, the registration server sends a build XTunnel Request message to request the existing IWF to build an XTunnel to the new wireless hub. Later, the registration server sends a tear down XTunnel request message to request the existing IWF to tear down the existing XTunnel with the old wireless hub. The build and tear XTunnel Request messages can be combined into one message (See also Fig. 3; Col. 42, lines 40 plus). To avoid losing traffic during handoffs, For micro mobility, information about the new wireless hub is included in the Tear XTunnel message exchanged between the serving IWF and the old WH. That way, the old wireless hub can

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forward buffered packets to the new wireless hub upon hearing a TearXTunnel message from the serving IWF. Alternatively, the RLP layer at the IWF knows the sequence number that has been acknowledged by the old wireless hub so far. At the same time, the IWF knows the current send sequence number of the latest packet sent to the old wireless hub. Therefore, the IWF can forward those packets that are ordered in between these two numbers to the new wireless hub before sending newer packets to the new wireless hub. The RLP layer is assumed to be able to filter duplicate packet. The second approach is probably preferable to the first approach for the old wireless hub may not be able to communicate with one another directly (Col. 46, lines 64 plus).

In the same field of endeavor, Sato (US#6,553,015,) teaches handoff method for a mobile ATM communications network, wherein upstream ATM cells and downstream ATM cells are transmitted between a mobile site and a fixed site over a first communication link and a handoff request message is sent from the mobile site to the fixed site when the first communication link is likely to become unavailable. The handoff method comprises the steps of (a) *holding the upstream ATM cells in a mobile-site buffer immediately following the transmission of the handoff request message* and determining the location of one of the upstream cells within the mobile-site buffer which is to be transmitted first when transmission of upstream cells is resumed and storing an address pointer indicating the location in a mobile-site memory, (b) transmitting an end-of-stream OAM cell from the mobile site to the fixed site over the first communication link, (c) holding the downstream ATM cells in a fixed-site buffer in response to the end-of-stream OAM cell and determining the location of one of the downstream cells within the fixed-site buffer which is to be transmitted first when transmission of downstream cells is resumed and storing an

address pointer indicating the location in a fixed-site memory, (d) establishing a second communication link between the mobile site and the fixed site, and (e) resuming transmission of upstream ATM cells from the mobile site, starting with a location of the mobile-site buffer specified by the address pointer in the mobile-site memory and resuming transmission of downstream ATM cells from the fixed site, starting with a location of the fixed-site buffer specified by the address pointer in the fixed-site memory (Col. 20, lines 4 plus).

With respect to claim 28, it's a system claim corresponding to the method claim 1 as discussed in paragraph 4 above. Therefore, claim 28 is analyzed and rejected as previously discussed with respect to claim 1.

With respect to claims 8-13 and 23-27, These claims differ from claims Rai et al. in view of Sato in that the claims recited a software program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 1-7. It would have been obvious to a person of ordinary skill in the art to implement a software program product in Rai et al. in view of Sato for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to a handoff of a mobile in a mobile IP network, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently in supporting the transfer of data to a mobile node in mobile IP handoffs utilizing buffer control messages, and would have applied Sato's teaching of the initiation request messages of the handoff into Rai's novel use of the micro mobility handoff scenario in mobile IP handoffs messages. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Sato's high speed switching of communications links

without interrupting ATM cell traffic into Rai's sequence delivery of messages with the motivation being to provide a method and system for supporting a handoff of a mobile node in mobile IP handoffs messages.

5. Claims 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rai et al. (US#6,414,950) in view of Sato (US#6,553,015) as applied to the claims above, and further in view of Siu et al. (US#6,252,851).

With respect to claims 14-22, these claims differ from the claims above in that the claims require the buffer controlling messages in supporting handoff. In the same field of endeavor, Siu et al. (US#6,252,851) discloses a method for regulating flow through a network node where forwarding of successive data packets from sources is dependent on receipt of acknowledgments from the destinations, the packets are buffered in a packet buffer as they arrive from their sources. Acknowledgments are withheld in an acknowledgment bucket, and are released such that successive data packets are buffered in the sources to avoid overflow of the packet buffer due to bandwidth limitations toward the destinations. The destination is typically in a bandwidth constrained network (BCN) while the source is in a local area network (LAN) using transmission control protocol (TCP). In a preferred embodiment the BCN operates in asynchronous transfer mode (ATM), and a transmission rate of the BCN is returned upon request. TCP source states are maintained by observing TCP traffic through the node. The behavior of TCP sources is predicted from traffic observations. Then, the known transmission rate of the BCN is translated to a timed sequence of acknowledgments releases based on the predicted behavior. Alternatively, an estimate is maintained of effective queue size, which includes data buffered in the packet buffer,

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and residual data packets, i.e., those data packets that have been requested but have not yet been received at the node. An acknowledgment is released if the effective queue size is less than a threshold, which may be dynamic (See Fig. 5; Col. 3, lines 10 plus).

One skilled in the art would have recognized the need for effectively and efficiently in supporting the transfer of data to a mobile node in mobile IP handoffs utilizing buffer control messages, and would have applied Siu's buffer control in regulating TCP flow and Sato's teaching of the initiation request messages of the handoff into Rai's novel use of the micro mobility handoff scenario in mobile IP handoffs messages. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Siu's method for regulating TCP flow over heterogeneous networks, and Sato's high speed switching of communications links without interrupting ATM cell traffic into Rai's sequence delivery of messages with the motivation being to provide a method and system for supporting a handoff of a mobile node in mobile IP handoffs messages.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Chuah et al. (US#6,665,718) is cited to show the mobility management system.

The Trompower et al. (US#6,088,591) is cited to show the cellular system hand-off protocol.

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The Raychaudhuri et al. (US#6,023,461) is cited to show the virtual distributed home agent protocol.

The Moelard (US#5,636,217) is cited to show the method for connecting roaming stations in a source routed bridged local area network.

The Moelard et al. (US#5,371,738) is cited to show the wireless local area network system with mobile station handover.

The Lee (US#6,539,225) is cited to show the seamless data network telecommunication service during mobile wireless call handoff.

The Chiou et al. (US#6,473,413) is cited to show the methods for inter-IP-domain roaming across wireless networks.

The Wang (US#6,526,033) is cited to show the delivering calls to GSM subscribers roaming to CDMA networks via IP tunnels.

The valentine et al. (US#6,353,607) is cited to show the IP base GSM inter-MSC handover.

The Kumaki et al. (US#6,473,411) is cited to show the router device, datagram transfer method and communication system realizing handoff control for mobile terminals.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

8. *Any response to this action should be mailed to:*

Commissioner of Patents and Trademarks

Washington, D.C. 20231

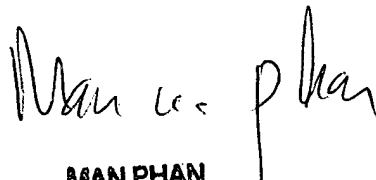
or faxed to: (703) 305-9051, (for formal communications intended for entry)

Or: (703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive,
Arlington. VA., Sixth Floor (Receptionist).

Mphan

03/20/2004.


MAN PHAN
PATENT EXAMINER